

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-4 are pending in the application, with claim 1 being the only independent claim. Claims 21-24 are sought to be canceled without prejudice to or disclaimer of the subject matter therein. Claim 1 is sought to be amended. Applicants reserve the right to prosecute similar or broader claims, with respect to the canceled and amended claims, in the future. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Official Entry of Amended Title

Applicants note that the Title has not been officially amended as requested in the reply filed on October 29, 2008. Applicants respectfully request that the Title be updated to reflect this amendment and should read as, “**Vibration Isolation System**”.

Examiner Interview

Applicants thank the Examiner for the personal interview conducted on February 17, 2010. During the interview, Applicants’ representatives, primary Examiner Wood, and Examiner Chilcot discussed the differences between the present invention and the cited references. In particular, claim 1 was discussed. The Examiners suggested clarifying amendments, as shown above, that would be sufficient to overcome the outstanding 35 U.S.C. § 102(b) rejections.

Rejections under 35 U.S.C. § 102

In view of Tatsuya

Claims 1-4 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Japan Patent No. JP112433 to Tatsuya (“Tatsuya”). Applicants respectfully traverse this rejection.

Amended claim 1 recites, *inter alia*,

a control system coupled to the active isolator devices that:

- (a) ***correlates vibrations*** measured ***in a first coordinate system with vibrations in modal directions*** based on natural modes or eigenmodes of the body, wherein the ***natural modes or eigenmodes*** of the body ***depend on physical characteristics*** of the body ***and*** the body’s ***coupling to an environment***, and are ***defined by*** the ***directions*** in which the ***body naturally vibrates***;
- (b) ***transforms vibrations*** measured in a ***first coordinate system*** of the plurality of sensors ***into vibrations in modal directions***, that comprise a ***second coordinate system, corresponding to the natural modes or eigenmodes of the body***;
- (c) determines a modal compensation signal for each modal direction;
- (d) transforms each modal compensation signal into an active isolator control signal in the first coordinate system for each active isolator device; and
- (e) stabilizes at least one unstable natural mode of the body.
(emphasis added)

As discussed in the Examiner Interview on February 17, 2010, Applicants respectfully submit that Tatsuya does not disclose at least the above-noted distinguishing features of claim 1. The operational “modes” and control “modes” that appear to be disclosed by Tatsuya do not involve the claimed correlations and transformations of the Cartesian vibration measurements to any form of “modal” coordinate system (*i.e.*, a second coordinate system). Further, there appears to be no disclosure in Tatsuya regarding the claimed “modal directions ... corresponding to the natural modes or eigenmodes of the body” that “depend on physical characteristics of the body and the body’s coupling to an environment[.]”

Accordingly, Applicants submit that Tatsuya does not disclose a “a control system coupled to the active isolator devices that: (a) *correlates vibrations measured in a first coordinate system with vibrations in modal directions* based on natural modes or eigenmodes of the body, wherein the *natural modes or eigenmodes* of the body *depend on physical characteristics* of the body *and* the body’s *coupling to an environment*, and are *defined by* the *directions* in which the *body naturally vibrates*; (b) *transforms vibrations* measured in a *first coordinate system* of the plurality of sensors *into vibrations in modal directions*, that comprise a *second coordinate system, corresponding to the natural modes or eigenmodes of the body*; (c) determines a modal compensation signal for each modal direction; (d) transforms each modal compensation signal into an active isolator control signal in the first coordinate system for each active isolator device; and (e) stabilizes at least one unstable natural mode of the body[,.]” as recited in amended claim 1.

Therefore, Tatsuya does not anticipate claim 1. Claims 2-4, all of which depend from independent claim 1, are also patentable over Tatsuya for reasons similar to those set forth above with respect to amended independent claim 1, and further in view of their own respective features.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1-4, and find the claims allowable over the applied reference.

In view of Masato

Claims 1-4 have also been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Japan Application Publication No. JP 10-275756 to Masato (“Masato”). Applicants respectfully traverse this rejection.

As discussed in the Examiner Interview on February 17, 2010, Applicants respectfully submit that Masato does not disclose at least the above-noted distinguishing features of claim 1. The calculated dislocation of the main body and re-associated reticle dislocation that appear to be disclosed by Masato do not involve the claimed correlations and transformations of the Cartesian vibration measurements to any form of “modal” coordinate system. Further, there appears to be no disclosure in Masato regarding the claimed “modal directions ... corresponding to the natural modes or eigenmodes of the body” that “depend on physical characteristics of the body and the body’s coupling to an environment[.]”

Accordingly, Applicants submit that Masato does not disclose a “a control system coupled to the active isolator devices that: (a) *correlates vibrations measured in a first coordinate system with vibrations in modal directions* based on natural modes or eigenmodes of the body, wherein the *natural modes or eigenmodes* of the body *depend on physical characteristics* of the body *and the body’s coupling to an environment*, and are *defined by the directions* in which the *body naturally vibrates*; (b) *transforms vibrations* measured in a *first coordinate system* of the plurality of sensors *into vibrations in modal directions*, that comprise a *second coordinate system, corresponding to the natural modes or eigenmodes of the body*; (c) determines a modal compensation signal for each modal direction; (d) transforms each modal compensation signal into an active isolator control signal in the first coordinate system for each active isolator device; and (e) stabilizes at least one unstable natural mode of the body[.]” as recited in amended claim 1.

Therefore, Masato does not anticipate claim 1. Claims 2-4, all of which depend from independent claim 1, are also patentable over Masato for reasons similar to those set forth above with respect to independent claim 1, and further in view of their own respective features.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1-4, and find the claims allowable over the applied reference.

In view of Applicants' Specification

Claims 1-4 have been rejected under 35 U.S.C. § 102(b) as alleged being anticipated by Applicants' specification in paragraph [0043] through [0044]. Applicants respectfully traverse this rejection.

Applicants submit that the Examiner has failed to establish that the active vibration isolation system discussed in paragraphs [0043] and [0044] of Applicants' specification necessarily employed a modal decoupling technique. Paragraph [0044] of Applicants' specification merely states, *inter alia*, that:

A known active vibration isolation system comprises active isolation devices and a control system to control the active isolation devices. Such an active isolation system, in particular the control system thereof, *may be configured* to employ a modal decoupling technique.

(emphasis added)

Applicants did not state that a "known" active vibration isolation system employs a modal decoupling technique. Rather, Applicants merely stated that such a system may be configured to employ a modal decoupling technique, such as further described in the application. This paragraph appears, at most, merely to disclose that an active vibration isolation system is known, but that application of a modal decoupling technique as further described in the application to such a system is new.

However, even assuming, *arguendo*, that an active vibration isolation system configured to employ a modal decoupling technique may have been "known" (which Applicants do not concede for at least the reasons discussed above), the Examiner has failed

to establish how paragraphs [0043] and [0044] of Applicants' specification discloses "a control system coupled to the active isolator devices that: (a) *correlates vibrations measured in a first coordinate system with vibrations in modal directions* based on natural modes or eigenmodes of the body, wherein the *natural modes or eigenmodes* of the body *depend on physical characteristics* of the body *and* the body's *coupling to an environment*, and are *defined by* the *directions* in which the *body naturally wants to vibrate*; (b) *transforms vibrations* measured in a *first coordinate system* of the plurality of sensors *into vibrations in modal directions*, that comprise a *second coordinate system, corresponding to the natural modes or eigenmodes of the body*; (c) determines a modal compensation signal for each modal direction; (d) transforms each modal compensation signal into an active isolator control signal in the first coordinate system for each active isolator device; and (e) stabilizes at least one unstable natural mode of the body[.]" as recited in amended claim 1. For example, paragraphs [0043] and [0044] of Applicants' specification make no mention or suggestion of a control system having all the features claimed. Indeed, to anticipate a claim, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). *See also*, M.P.E.P. § 2131.

Therefore, Applicants respectfully submit that anticipation of claims 1-4 has not been established. Thus, Applicants request that the rejection of claims 1-4 under 35 U.S.C. § 102(b) in view of paragraphs [0043] and [0044] of Applicants' specification be withdrawn and the claims be allowed.


Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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Date: March 11, 2010

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